

Amendments to the Claims:

This listing of claims will replace all prior versions, and listings, of claims in the application:

Listing of Claims:

- 5 1. (original) A process for the production of methanol comprising:
- (a) feeding an amount of a hydrocarbon feedstock and an amount of an oxygen feedstock to a partial oxidation reactor to produce a partial oxidation reactor effluent comprising hydrogen, carbon monoxide and carbon dioxide;
- 10 (b) adding an amount of a hydrogen feedstock to the partial oxidation reactor effluent to produce a synthesis gas stream having a predetermined ratio of hydrogen to carbon monoxide; and,
- (c) subjecting the synthesis gas stream to methanol synthesis to produce a methanol product stream and a tail gas stream
- 15 wherein reformation is not used to provide hydrogen as a product.
2. (original) The process as claimed in claim 1 further comprising electrolyzing water to produce hydrogen and oxygen and recovering at least some of the hydrogen to produce at least a portion of the hydrogen feedstock.
- 20 3. (original) The process as claimed in claim 2 further comprising the step of recovering at least a portion of the oxygen from the water electrolysis to produce at least a portion of the oxygen feedstock.
- 25 4. (original) The process as claimed in claim 1 further comprising the step of adjusting the amount of the oxygen feedstock to the amount of the hydrocarbon feedstock fed to the partial oxidation reactor such that the partial oxidation reactor effluent contains some unoxidized hydrocarbon feedstock.

5. (original) The process as claimed in claim 4 wherein the partial oxidation reactor effluent contains less than about 10 wt % unoxidized hydrocarbon feedstock based on the weight of the partial oxidation reactor effluent.
- 5
6. (original) The process as claimed in claim 4 wherein the synthesis gas contains less than about 4 wt % unoxidized hydrocarbon feedstock based on the weight of the partial oxidation reactor effluent.
- 10 7. (original) The process as claimed in claim 1 further comprising the step of adjusting the amount of the oxygen feedstock to the amount of the hydrocarbon feedstock fed to the partial oxidation reactor such that the partial oxidation reactor effluent is essentially free of oxygen.
- 15 8. (original) The process as claimed in claim 1 wherein the synthesis gas which is subjected to methanol synthesis has a ratio of hydrogen minus carbon dioxide mole fraction to carbon dioxide plus carbon monoxide mole fraction of from about 1:1 to about 3:1.
- 20 9. (original) The process as claimed in claim 1 wherein the synthesis gas, which is subjected to methanol synthesis, has a ratio of hydrogen minus carbon dioxide mole fraction to carbon dioxide plus carbon monoxide mole fraction which is about 2:1.
- 25 10. (original) The process as claimed in claim 1 further comprising the step of recycling a portion of the tail gas stream to the partial oxidation reactor.

11. (original) The process as claimed in claim 1 further comprising the step of withdrawing a purge stream from the tail gas stream and recycling essentially the remainder of the tail gas stream to the partial oxidation reactor.
- 5 12. (original) The process as claimed in claim 1 wherein the tail gas stream contains nitrogen and the method further comprises separating at least a portion of the nitrogen from the waste gas stream to produce a nitrogen rich purge stream and a nitrogen reduced waste gas stream that is recycled to the partial oxidation reactor.
- 10 13. (original) The process as claimed in claim 12 wherein a membrane separator is used to separate the tail gas stream into the nitrogen reduced waste gas stream and the nitrogen rich purge stream.
- 15 14. (original) The process as claimed in claim 12 further comprising combusting the nitrogen rich purge stream to produce energy.
15. (original) The process as claimed in claim 14 wherein the combustion of the purge stream produces heat that is used to preheat at least one of the feedstocks of the partial oxidation reactor.
- 20 16. (original) The process as claimed in claim 14 further comprising electrolyzing water to produce hydrogen and oxygen and recovering at least some of the hydrogen to produce at least a portion of the hydrogen feedstock and wherein the combustion of the purge stream produces electricity.
- 25 17. (original) The process as claimed in claim 12 wherein the partial oxidation reactor produces waste heat and the waste heat is used to generate electricity.

18. (original) The process as claimed in claim 2 wherein the electrolysis is conducted by running a fuel cell in reverse.
- 5 19.(original) The process as claimed in claim 1 wherein at least a portion of at least one of the hydrocarbon feedstock and the hydrogen feedstock is obtained from biogas.
- 20.(original) The process as claimed in claim 1 wherein the hydrocarbon
10 feedstock includes carbon dioxide.
21. (original) The process as claimed in claim 20 wherein additional carbon dioxide is provided by a carbon dioxide feed stream and at least a portion of the carbon dioxide stream is obtained from biogas.
- 15 22.(original) The process as claimed in claim 20 wherein additional carbon dioxide is provided by a carbon dioxide feed stream.
- 23.(original) The process as claimed in claim 1 wherein the hydrocarbon
20 feedstock is obtained from biogas and includes carbon dioxide.
24. (original) The process as claimed in claim 23 wherein the carbon dioxide feed stream is provided upstream from the partial oxidation reactor.
- 25 25.(original) The process as claimed in claim 23 wherein the carbon dioxide feed stream is provided downstream from the partial oxidation reactor.
26. (original) The process as claimed in claim 1 wherein the biogas is obtained from anaerobic decomposition of biomatter.

Appl. No. 10/798312
Amdt. Dated November 23, 2007
Reply to Office action of November 24, 2007

27 - 52 Cancelled